

**REMARKS**

Claims 1, 2 and 5-8 are pending in the above-identified application.

**Claim Amendments**

By this amendment, claims 3 and 4 are cancelled, with the limitations of claim 4 added to claim 1. Claim 1 is further amended to recite limitations supported at paragraphs [0015], [0016], and [0018] to [0021] of the specification. No new matter is added by this amendment.

**Applicant's Invention**

Applicant's invention embodies the following main features:

- (i) the golf ball comprises at least one core layer and a cover covering the core;
- (ii) the cover is formed from a material having a value of the maximum load of 1.5 to 3.0 kN at an impact energy of 47.3 J in penetration and impact tests;
- (iii) the material for the cover is selected from the group consisting of polyurethane-based thermoplastic elastomer; thermosetting polyurethane composition; thermoplastic elastomer other than polyurethane-based thermoplastic elastomer; and mixtures thereof;

- (iv) the innermost layer of the core is formed from a rubber composition comprising cis-1,4-polybutadiene;
- (v) the core has a deformation amount from an initial load of 98 N to a final load of 1275 N of 2.5 to 4.5 mm; and
- (vi) the core has a hardness distribution such that the center point is the softest and the outer portion has a higher hardness in order, a hardness difference in Shore D hardness between the center hardness and surface hardness is 15 to 45, the center hardness in Shore D hardness is 20 to 50, and the surface hardness in Shore D hardness is 45 to 72.

In applicant's invention, the cover is formed from a material having a value of the maximum load of 1.5 to 3.0 kN at an impact energy of 47.3 J in penetration and impact fatigue tests (feature (ii) above). The technical meaning of limiting the value of the maximum load at an impact energy of 47.3 J in penetration and impact fatigue tests in the present invention is described in paragraphs [0002] to [0007] and [0013] of the specification. The test method is described at paragraph [0055] and Figure 1. The value of the maximum load at an impact energy of 47.3 J in penetration and impact fatigue tests is the most important feature in the present invention as described there.

The Examiner's attention is directed to the discussion at paragraph [0013] of the specification reproduced below for the sake of convenience:

[0013] The present inventors have studied a mode of the actual scuff phenomenon. As a result, it is considered that the scuff occurs in a penetration mode, and they noticed penetration and impact fatigue properties. Therefore, it was apparent that a value of the maximum load in penetration and impact fatigue tests closely correlate with scuff resistance. There have been golf balls, of which the cover is designed in view of a formulation and wear of the cover material, in the prior art as described above. It is possible in some degree to improve the scuff resistance by using the cover material of Japanese Patent Kokai publication No. 102628/2000, or by using the cover material of Japanese Patent Kokai publication No. 299965/2001 to reduce the wear amount. However, there were golf balls, of which the scuff resistance is not sufficiently obtained, among the golf balls obtained by using the above cover materials, and there was no index based on the scuff phenomenon. Therefore, in the present invention, it was found that the golf ball having excellent scuff resistance was obtained by adjusting the value of the maximum load at an impact energy of 47.3 J in penetration and impact fatigue tests of the cover to a specified range. In the present invention, penetration mode, which is not tensile mode, is selected in impact test, because it is considered that the penetration mode is similar to impact phenomenon when hit the golf ball by an iron club.

The material used for the cover in the golf ball of the present invention is described at paragraphs [0030] to [0031] of the specification. Such material is not limited as long as the cover is formed from a material having the specified range of

values for the maximum load at an impact energy of 47.3J in penetration and impact fatigue tests (see paragraph [0030]). Therefore, in the present invention, it is required for the cover to be formed from a material having a value of the maximum load of 1.5 to 3.0 kN at an impact energy of 47.3J in penetration and impact fatigue tests.

The present invention exhibits unexpected, advantageous properties as evidenced by the comparative test results shown in Tables 1-7 at pages 22-32 of the specification. Note that Example Nos. 1-9 (present invention) all exhibit significantly and advantageously improved "scuff resistance" as compared to Comparative Example Nos. 1-8, even though the Comparative Examples employ the same core structures/compositions and similar cover compositions having the same hardness and thickness properties. Consequently, unless the maximum load of at least 1.5 kN is satisfied, the advantageous properties of the golf ball of the present invention cannot be obtained.

The claimed invention is neither disclosed nor suggested by the cited prior art.

**Rejection under 35 USC 103(a)**

Claims 1-8 stand rejected under 35 U.S.C. 103(a) as obvious over Nesbitt U.S. Patent No. 6,663,509. This rejection is traversed for the following reasons.

In support of the rejection, the Examiner takes the following position:

"Nesbitt discloses a golf ball comprising a core, an inner cover layer (app's outer core), and an outer cover layer. The core is made from a high cis-polybutadiene. The outer cover layer may be made from thermoplastic or thermoset polyurethanes. The outer cover layer may be made from thermoplastic or thermoset polyurethanes. The outer cover layer has a thickness from 0.01 to 0.10 inch or 0.254 to 2.54 mm and has a Shore D hardness of 55 or less. The maximum load value is considered an obvious feature since the materials are similar and the hardness is within applicant's range. One of ordinary skill in the art would have varied the maximum load for the desired performance features."

In response, Nesbitt fails to disclose or suggest that the core (1) has a deformation amount when applying from an initial load of 98N to a final load of 1275 N of 2.5 to 4.5 mm, and (2) has a deformation amount when applying an initial load of 98N to a final load of 175N of 2.5 to 4.5mm (feature (v) above).

Further, with respect to the core hardness, the surface hardness of the inner core is shown in Table 16, but the inner core is formed from a thermoplastic material. In the claimed invention, the innermost layer of the core is formed from a rubber composition comprising cis-1,4-polybutadiene (feature (iv) above).

Nesbitt et al further fails to teach or suggest that the core has a hardness distribution such that the center point

is the softest and the outer portion has higher hardness in that order, a hardness difference in Shore D hardness between the center hardness and surface hardness of 15 to 45, the center hardness in Shore D hardness is 20 to 50, and the surface hardness in Shore D hardness is 45 to 72 (feature (vi) above).

In summary, in the claimed invention, a golf ball can be provided having excellent scuff resistance by incorporating each of features (i) to (vi) above. However, Nesbitt et al fails to teach or suggest at least features (ii), (v) or (vi).

In view of the above, the Examiner fails to present a *prima facie* case of obviousness. The rejection is thus without basis and should be withdrawn.

The application is believed to be in condition for allowance, and an early indication of same earnestly is solicited.

If any questions arise regarding the above matters, please contact Applicant's representative, Andrew D. Meikle (Reg. No. 32,868), in the Washington Metropolitan Area at the phone number listed below.

A check in the amount of \$120.00 is attached as payment for the requested one month extension of time.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any


overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 

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